DELAWARE LEVEL 1 INTERCONNECTION APPLICATION/AGREEMENT

With Terms and Conditions for Interconnection
(Lab Certified Inverter-Based Small Generator Facilities Less than or Equal to 10 kW)

The Green Power Connection™ Team
Delmarva Power
A PHI Company
(866) 634-5571 - Phone
gpc-north@pepcoholdings.com

(Send applications via Email or Mail to Delmarva Power, GPC Team)

Mailing Address: 5 Collins Drive, Mail Stop 84CP22, Carneys Point, NJ 08069

delmarva power
A PHI Company

PART 1

DELAWARE LEVEL 1 INTERCONNECTION APPLICATION & AGREEMENT

With Terms and Conditions for Interconnection
(Lab Certified Inverter-Based Small Generator Facilities Less than or Equal to 10 kW)

(Application & Conditional Agreement – to be completed prior to installation)

INTERCONNECTION CUSTOMER CONTACT INFORMATION

Customer Name: Bayside Exteriors LLC

Mailing Address: 32295 Nassau Rd

City: Lewes State: DE Zip Code: 19958

Contact Person/Authorized Agent (If other than above): _____

Mailing Address (If other than above): _____

Telephone (Daytime): 302-233-1484 (Evening): _____

Fax Number: _____ E-Mail Address (Required): andrew@baysideexteriors.net

Alternate Project Contact Information: (if different from Customer-Generator above)

Alternate Name: _____

Mailing Address: _____

City: _____ State: _____ Zip Code: _____

Telephone (Daytime): _____ (Evening): _____

Fax Number: _____ E-Mail Address: _____

If an email is provided for your alternate contact, that contact will receive all email communications.

FACILITY INFORMATION

Facility Address: 32295 Nassau Rd

City: Lewes State: DE Zip Code: 19958

DPL Account #: 5500 2463 531 Meter #: _____

Current Annual Energy Consumption (optional): _____ kWh

Check if this Facility (building) is, or is going to be, NEW CONSTRUCTION: ☐

Estimated Commissioning Date: 4/30/17

Energy Source: Solar PV Prime Mover: Photovoltaics

Type of Application: Initial ☐ Addition/Upgrade ☒ [1]

Initial Rating: DC Generator Total[2] Nameplate Rating: 14 (kW),
AC Inverter Total[3] Rating 11 (kW),
AC System Design Total Capacity[4]: 11 (kW) 11000 (kVA)

Added Rating (**if upgrade**): DC Generator Total Nameplate Rating: 8.85 (kW),
AC Inverter Total Rating 6 (kW),
AC System Design Total Capacity: 6 (kW) 6000 (kVA)

Total Rating (**if upgrade**): DC Generator Total Nameplate Rating: 22.85 (kW),
AC Inverter Total Rating 17 (kW),
AC System Design Total Capacity: 17 (kW) 17000 (kVA)

Generator (or PV Panel) Manufacturer, Model #[5]: Solarworld 295w MONO

A copy of Generator nameplate and Manufacturer's Specification Sheet may also be submitted

Number of Generators (or PV Panels): 30

Type of Tracking if PV: Fixed ☒ Single Axis ☐ Double Axis ☐

Array Azimuth if PV: 215 ° Array Tilt if PV: 28 °

Shading Angles if PV at E, 120°,150°,S,210°,240°,W: _____ ° (Separate with comas)

Inverter Manufacturer[6]: Fronius Model Number(s) of Inverter[7]: PRIMO 6.0

Number of Inverters[8]: 1 Inverter Type: Forced Commutated ☐ Line Commutated ☒

Ampere Rating: 25 $Amps_{AC}$, Number of Phases: ☒ 1 ☐ 3

Nominal Voltage Rating: 240 V_{AC}, Nominal DC Voltage: 320 V_{DC},

Power Factor: 100 %, Frequency: 60 Hz, Efficiency: 96 (%)

DPL Taggable, Lockable, Accessible Disconnect[9]: ☐ Yes ☐ No,

If Yes, Location: _____

One-line Diagram Attached (Required): ☒ Yes ☐ No,

Site Plan Attached (Required): ☒ Yes ☐ No

Do you plan to export power?[10] ☒ Yes ☐ No, If Yes, Estimated Maximum: 6 kW_{AC}

Estimated Gross Annual Energy Production: 10648 kWh

Is the inverter IEEE/UL1741 lab certified? Yes ☒ No ☐
(If yes, attach manufacturer's cut sheet showing listing and label information from the appropriate listing authority, e.g. UL 1741 listing. If no, facility is not eligible for Level 1 Application.)

---

[1] Initial if first time generator request. Addition/Upgrade if this is an add-on to a previously approved system.
[2] Sum of all generators or PV Panels
[3] Sum of all inverters
[4] This will be your system design capacity based upon your unique system variables.
[5] If more than one type, please list all manufactures and model numbers.
[6] If more than one manufacture, please list all.
[7] If more than one model number, please list all.
[8] Attach additional sheets as necessary in the event of multiple inverters of various types/sizes
[9] This is strongly recommended by the utility. Best practice is to have an externally accessible, lockable, disconnect with visible open/close connection and to have appropriate signage on the disconnect, such as 'Solar PV AC Disconnect' (preferably red) and on the meter housing 'Caution, Solar Electric System'" (preferably yellow). If the disconnect is not in the immediate vicinity of the meter, please include the disconnect location on the meter signage. This enables the utility and first responders to more quickly deal with an emergency situation.
[10] Yes, if your expected maximum output of the inverter (kW AC) is greater than the lowest load you anticipate at your facility during maximum PV output (kW). The difference would be the amount you may export.

EQUIPMENT INSTALLATION CONTRACTOR Owner (Customer) Installed: ☐Yes ☐No

Contractor Name: Alutech United Inc

Mailing Address: 117 Dixon St

City: Selbyille State: DE Zip Code: 1997

Telephone (Daytime): 800-233-1144 (Evening): 302-841-9059

Fax Number: 302-436-5100 E-Mail Address (Required): Haleigh@greenstreetsolar.com

ELECTRICAL CONTRACTOR

Electrical Contractor Name: Alutech United Inc

Mailing Address: 117 Dixon St

City: Selbville State: DE Zip Code: 19975

Telephone (Daytime): 800-233-1144 (Evening): 302-841-9059

Fax Number: 302-436-5100 E-Mail Address: Russell@greenstreetsolar.com

License number: T1-0005686 Active License? Yes ☒ No ☐

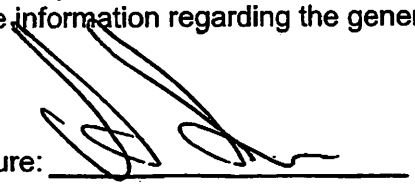
Is small generator facility eligible for Net Metering? Yes ☒ No ☐

INSURANCE DISCLOSURE

The attached terms and conditions contain provisions related to liability and indemnification, and should be carefully considered by the interconnection customer. The interconnection customer is not required to obtain general liability insurance coverage as a precondition for interconnection approval; however, the interconnection customer is advised to consider obtaining appropriate insurance coverage to cover the interconnection customer's potential liability under this agreement.

CUSTOMER SIGNATURE

I hereby certify that: 1) I have read and understand the terms and conditions which are attached hereto by reference and are a part of this Agreement; 2) I hereby agree to comply with the attached terms and conditions; and 3) to the best of my knowledge, all of the information provided in this application request form is complete and true. I consent to permit the PSC and interconnecting utility to exchange information regarding the generating system to which this application applies.

Interconnection Customer Signature:  Date: 3/1/17

Printed Name: Andrew Lewandowski Title: Owner

Conditional Agreement to Interconnect Small Generator Facility *(for EDC use only)*

Receipt of the application fee is acknowledged and, by its signature below, the EDC has determined the interconnection request is complete. Interconnection of the small generator facility is conditionally approved contingent upon the attached terms and conditions of this Agreement the return of the attached Certificate of Completion duly executed, verification of electrical inspection and successful witness test or EDC waiver thereof.

EDC Signature: _____ Date: _____

Printed Name: _____ Title: _____

Level 1 Interconnection Agreement

Terms and Conditions for Delaware Interconnection

(Lab Certified Inverter-Based Small Generator Facilities Less than or Equal to 10 kW)

1) **Construction of the Small Generator Facility.** The Interconnection Customer may proceed to construct (including operational testing not to exceed 2 hours) the Small Generator Facility once the Conditional Agreement to Interconnect a Small Generator Facility on the preceding page has been signed by the EDC.

2) **Final Interconnection and Operation.** The Interconnection Customer may operate the Small Generator Facility and interconnect with the EDC's Electric Distribution System after all of the following have occurred:
   a) Electrical Inspection: Upon completing construction, the Interconnection Customer will cause the Small Generator Facility to be inspected by the local electrical wiring inspector with jurisdiction who shall establish that the Small Generator Facility meets the requirements of the National Electrical Code.
   b) Certificate of Completion: The Interconnection Customer shall provide the EDC with a completed copy of the Interconnection Agreement Certificate of Completion, including evidence of the electrical inspection performed by the local authority having jurisdiction. The evidence of completion of the electrical inspection may be provided on inspection forms used by local inspecting authorities. The Interconnection request shall not be finally approved until the EDC's representative signs the Interconnection Agreement Certificate of Completion.
   c) EDC has either waived the right to a Witness Test in the Interconnection Request, or completed its Witness Test as per the following:
      i) Within five (5) business days of the estimated commissioning date, the EDC may, upon reasonable notice and at a mutually convenient time, conduct a Witness Test of the Small Generator Facility to ensure that all equipment has been appropriately installed and that all electrical connections have been made in accordance with applicable codes;
      ii) If the EDC does not perform the Witness Test within the 5-day period or such other time as is mutually agreed to by the parties, the Witness Test is deemed waived.

3) **IEEE 1547.** The Small Generator Facility is installed operated and tested in accordance with the requirements of IEEE standard 1547, "Standard for Interconnecting Distributed Resources with Electric Power Systems", as amended and supplemented, at the time the interconnection request is submitted.

4) **Access.** The EDC shall have direct, unabated access to the disconnect switch and metering equipment of the Small Generator Facility at all times. The EDC shall provide reasonable notice to the customer when possible prior to using its right of access.

5) **Metering.** Any required metering shall be installed pursuant to appropriate tariffs and tested by the EDC pursuant to the EDC's meter testing requirements pursuant to the Code of Delaware Regulations, Title 26 - Public Utilities – Chapter 10. Electric Utility Restructuring §1014.

6) **Disconnection.** The EDC may temporarily disconnect the Small Generator Facility upon the following conditions:
   a) For scheduled outages upon reasonable notice;
   b) For unscheduled outages or emergency conditions;

c) If the Small Generator Facility does not operate in the manner consistent with this Agreement;
d) Improper installation or failure to pass the Witness Test;
e) If the Small Generator Facility is creating a safety, reliability or a power quality problem; or
f) The Interconnection Equipment used by the Small Generator Facility is de-listed by the Nationally Recognized Testing Laboratory that provided the listing at the time the interconnection was approved.

7) **Indemnification.** The parties shall at all times indemnify, defend, and save the other party harmless from any and all damages, losses, claims, including claims and actions relating to injury to or death of any person or damage to property, demand, suits, recoveries, costs and expenses, court costs, attorney fees, and all other obligations by or to third parties, arising out of or resulting from the other party's performance or failure to perform under this Agreement on behalf of the indemnifying party, except in cases of gross negligence or intentional wrongdoing by the indemnified party.

8) **Limitation of Liability.** Each party's liability to the other party for any loss, cost, claim, injury, liability, or expense, including reasonable attorney's fees, relating to or arising from any act or omission in its performance of this Agreement, shall be limited to the amount of direct damage actually incurred. In no event shall either party be liable to the other party for any indirect, incidental, special, consequential, or punitive damages of any kind whatsoever.

9) **Termination.** This Agreement may be terminated under the following conditions:
a) By Interconnection Customer - The Interconnection Customer may terminate this application agreement by providing written notice to the EDC.
b) By the EDC - The EDC may terminate this Agreement if the Interconnection Customer fails to remedy a violation of terms of this Agreement within 30 calendar days after notice, or such other date as may be mutually agreed to prior to the expiration of the 30 calendar day remedy period. The termination date can be no less than 30 calendar days after the Interconnection Customer receives notice of its violation from the EDC.

10) **Modification of Small Generator Facility.** The Interconnection Customer must receive written authorization from the EDC before making any changes to the Small Generator Facility, other than minor changes that do not have a significant impact on safety or reliability of the Electric Distribution System as determined by the EDC. If the Interconnection Customer makes such modifications without the EDC's prior written authorization, the EDC shall have the right to temporarily disconnect the Small Generator Facility.

11) **Permanent Disconnection.** In the event the Agreement is terminated, the EDC shall have the right to disconnect its facilities or direct the customer to disconnect its Small Generator Facility.

12) **Disputes.** Each party agrees to attempt to resolve all disputes regarding the provisions of these interconnection procedures pursuant to the dispute resolution provisions of the Delaware Standard Small Generator Interconnection Rules, Title 26 - Public Utilities – Chapter 10. Electric Utility Restructuring §1014.

13) **Governing Law, Regulatory Authority, and Rules.** The validity, interpretation and enforcement of this Agreement and each of its provisions shall be governed by the laws of the State of Delaware. Nothing in this Agreement is intended to affect any other agreement between the EDC and the Interconnection Customer. However, in the event that the provisions of this agreement are in conflict with the provisions of the EDC's tariff, the EDC tariff shall control.

14) **Survival Rights.** This Agreement shall continue in effect after termination to the extent necessary to allow or require either party to fulfill rights or obligations that arose under the Agreement.

15) **Assignment/Transfer of Ownership of the Small Generator Facility.** This Agreement shall terminate upon the transfer of ownership of the Small Generator Facility to a new Eligible Customer Generator (owner or tenant), unless the new Eligible Customer Generator notifies the EDC of the change, their agreement to abide by the Terms and Conditions of the original Interconnection Agreement, and so notifies the EDC in writing prior to or coincident with the transfer of electric service to the new customer. Should an interconnection agreement terminate for failure of a new customer to provide appropriate written agreement within 30 days, the EDC shall notify the Public Service Commission the Interconnection Agreement has been terminated.

16) **Definitions.** Any capitalized term used herein and not defined shall have the same meaning as the defined terms used in the Delaware Standard Small Generator Interconnection Rule, Title 26 - Public Utilities – Chapter 10. Electric Utility Restructuring §1014.

17) **Notice.** Unless otherwise provided in this Agreement, any written notice, demand, or request required or authorized in connection with this Agreement ("Notice") shall be deemed properly given if delivered in person, delivered by recognized national courier service, or sent by first class mail, postage prepaid, to the person specified below:

18) **Important Note.** Running grid-tied generation at a premise will generally raise voltage levels. A proper voltage drop/rise study must be done to insure that resulting voltages do not cause problems at the customer premise and/or to the operation of the inverter. If there are times when generator output will exceed the load of the premise, this will cause voltage rise across the line transformer and service line to the facility. Be sure this is taken into account when doing a voltage drop/rise analysis. If there are other customers that have grid-tied solar and their premise is fed by the same line transformer, be sure to take that into account when considering voltage rise across the line transformer. If the new generation system causes high voltage for other customers fed by the same transformer, it will be the responsibility of the newest generator installation to remediate the high voltage. The normal voltage at the meter without generation is 120 V +/- 5% (or other secondary voltages such as 208, 240, 480, etc.). Be sure to assume the highest voltage (+ 5%) at the meter when doing the voltage drop/rise analysis to insure acceptable voltage at the premise and at the inverter. **The utility is not responsible for elevated voltage caused by the operation of a generator.** The electrical grid has been designed to maintain 120 V +/- 5% (or other standard secondary voltages) during the course of the normal load cycle.

If to Interconnection Customer:

Use the contact information provided in the Agreement for the Interconnection Customer. The Interconnection Customer is responsible for notifying the EDC of any change in the contact party information, including change of ownership.

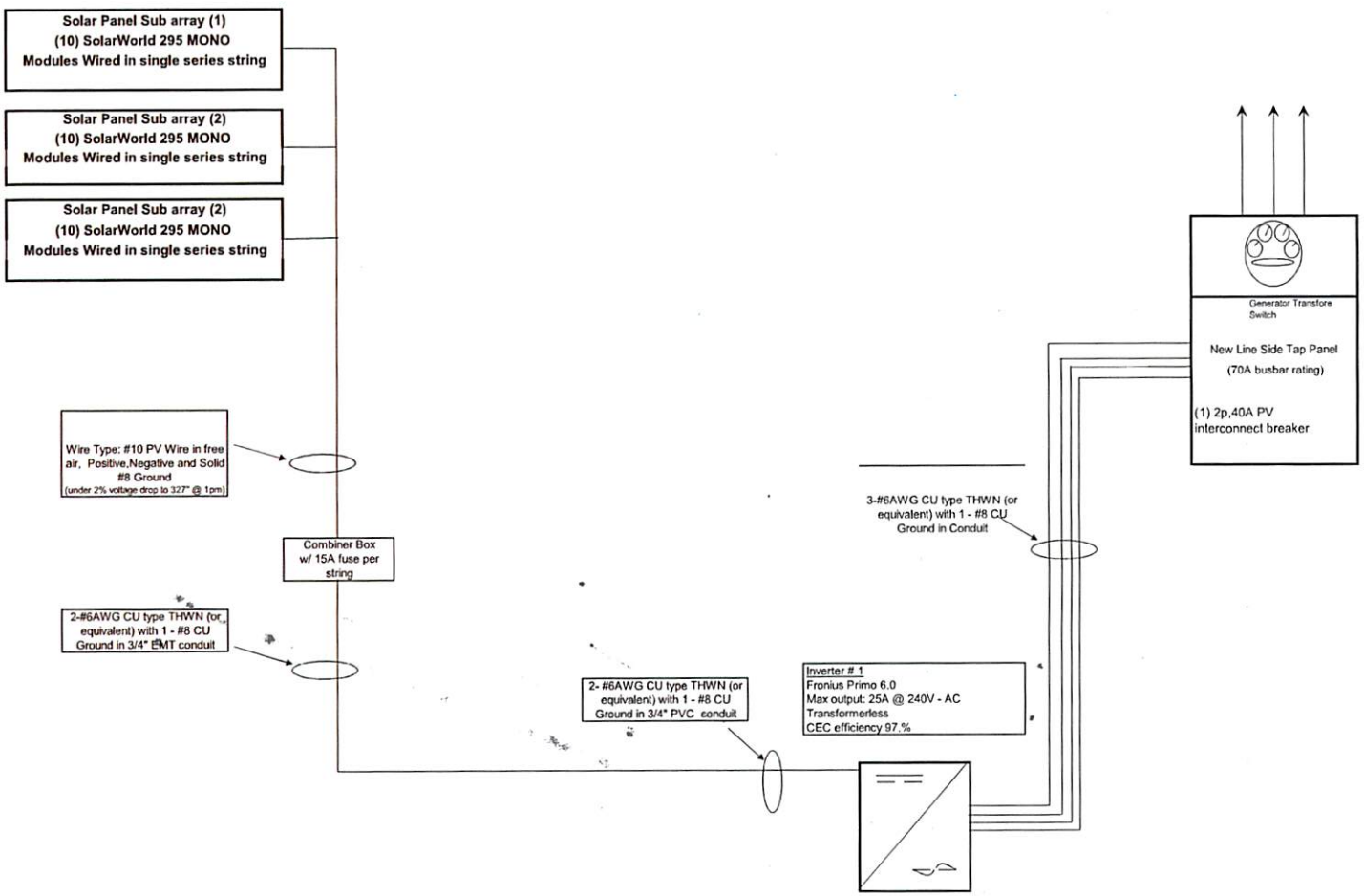
If to EDC:

Use the contact information provided on the EDC's web page for small generator interconnection.


Inverter
Old system
New system
1992
Imagery Date: 7/9/2015 38°45'01.32" N 75°11'03.24" W elev

Solar Module Specs:	
SolarWorld 295w Mono	
Pm=	295
Voc=	39.5
Vpm=	32.2
Isc=	9.6
Ipm=	9.12
Series Fuse=	15a

SYSTEM SPECS:	
String Voc=	434.5v
String Vpm=	354.2v
String Isc=	9.6a
String Imp=	9.12a
# of Strings	3
Rated System V=	354.2v
Rated System I=	27.36a
Maximum System V=	434.5v
Maximum System I=	28.8a



3 - String Panel System 8.85 kW DC System

green street solar
117 Dixon Street
Selbyville, Delaware 19975
Phone: 302-436-6005
Fax: 302-436-5100
web: www.greenstreetsolar.com

Project: Bayside Exteriors Job

Date: 3/1/2017

System Type: Grid-Tied PV System

NREL
NATIONAL RENEWABLE ENERGY LABORATORY

Caution: Photovoltaic system performance predictions calculated by PVWatts® include many inherent assumptions and uncertainties and do not reflect variations between PV technologies nor site-specific characteristics except as represented by PVWatts® inputs. For example, PV modules with better performance are not differentiated within PVWatts® from lesser performing modules. Both NREL and private companies provide more sophisticated PV modeling tools (such as the System Advisor Model at http://sam.nrel.gov) that allow for more precise and complex modeling of PV systems.

The expected range is based on 30 years of actual weather data at the given location and is intended to provide an indication of the variation you might see. For more information, please refer to this NREL report: The Error Report.

Disclaimer: The PVWatts® Model ("Model") is provided by the National Renewable Energy Laboratory ("NREL"), which is operated by the Alliance for Sustainable Energy, LLC ("Alliance") for the U.S. Department Of Energy ("DOE") and may be used for any purpose whatsoever.

The names DOE/NREL/ALLIANCE shall not be used in any representation, advertising, publicity or other manner whatsoever to endorse or promote any entity that adopts or uses the Model. DOE/NREL/ALLIANCE shall not provide

any support, consulting, training or assistance of any kind with regard to the use of the Model or any updates, revisions or new versions of the Model.

YOU AGREE TO INDEMNIFY DOE/NREL/ALLIANCE, AND ITS AFFILIATES, OFFICERS, AGENTS, AND EMPLOYEES AGAINST ANY CLAIM OR DEMAND, INCLUDING REASONABLE ATTORNEYS' FEES, RELATED TO YOUR USE, RELIANCE, OR ADOPTION OF THE MODEL FOR ANY PURPOSE WHATSOEVER. THE MODEL IS PROVIDED BY DOE/NREL/ALLIANCE "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE EXPRESSLY DISCLAIMED. IN NO EVENT SHALL DOE/NREL/ALLIANCE BE LIABLE FOR ANY SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES OR ANY DAMAGES WHATSOEVER, INCLUDING BUT NOT LIMITED TO CLAIMS ASSOCIATED WITH THE LOSS OF DATA OR PROFITS, WHICH MAY RESULT FROM ANY ACTION IN CONTRACT, NEGLIGENCE OR OTHER TORTIOUS CLAIM THAT ARISES OUT OF OR IN CONNECTION WITH THE USE OR PERFORMANCE OF THE MODEL.

The energy output range is based on analysis of 30 years of historical weather data for nearby , and is intended to provide an indication of the possible interannual variability in generation for a Fixed (open rack) PV system at this location.

RESULTS

10,648 kWh per Year *

System output may range from 10,176 to 10,940kWh per year near this location.

Month	Solar Radiation (kWh / m^2 / day)	AC Energy (kWh)	Energy Value ($)
January	3.36	713	97
February	4.12	782	107
March	4.65	957	131
April	5.44	1,035	141
May	6.00	1,166	159
June	6.44	1,177	161
July	5.09	959	131
August	5.75	1,084	148
September	4.28	802	109
October	3.72	729	99
November	3.94	777	106
December	2.26	468	64
Annual	**4.59**	**10,649**	**$ 1,453**

Location and Station Identification

Requested Location	Lewes DE
Weather Data Source	(TMY3) SALISBURY WICOMICO CO AP, MD 37 mi
Latitude	38.33° N
Longitude	75.52° W

PV System Specifications *(Residential)*

DC System Size	8.85 kW
Module Type	Standard
Array Type	Fixed (roof mount)
Array Tilt	28°
Array Azimuth	215°
System Losses	20%
Inverter Efficiency	96%
DC to AC Size Ratio	1.1

Economics

Average Cost of Electricity Purchased from Utility	0.14 $/kWh

Performance Metrics

Capacity Factor	13.7%

delmarva power
A PHI Company

PART 2

DELAWARE INTERCONNECTION APPLICATION & AGREEMENT

With Terms and Conditions for Interconnection
(Lab Certified Inverter-Based Small Generator Facilities Less than or Equal to 10 kW)

(Final Agreement – must be completed after installation and prior to interconnection)

Certificate of Completion[11]

INTERCONNECTION CUSTOMER CONTACT INFORMATION

Customer Name: Bayside Exteriors LLC

Mailing Address: 32295 Nassau Rd

City: Lewes State: DE Zip Code: 19958

Telephone (Daytime): 302-233-1484 (Evening): _____

Fax Number: _____ E-Mail Address: andrew@baysideexteriors.net

FACILITY INFORMATION

Facility Address: 32295 Nassau Rd

City: Lewes State: DE Zip Code: 19958

DPL Account #: 5500 2463 531 Meter #: _____

Energy Source: Solar PV Prime Mover: Photovoltaics

Inverter Type: Forced Commutated ☐ Line Commutated ■

Number of Inverters: 1

Inverter Manufacturer: Fronius Model Number(s) of Inverter: Primo 6.0

Rating

DC Generator Total[12] Nameplate Rating: 8.85 (kW),
AC Inverter Total[13] Rating 6.0 (kW),
AC System Design Total Capacity[14]: 6.0 (kW) 6000 (kVA)

Generator (or PV Panel) Manufacturer, Model #[15]: Solar World 295w Mono

[11] Information entered here on Certificate of Completion (Part 2) must match part 1
[12] Sum of all generators or PV Panels
[13] Sum of all inverters
[14] This will be your system design capacity based upon your unique system variables.
[15] If more than one type, please list all manufactures and model numbers.

EQUIPMENT INSTALLATION CONTRACTOR Owner (Customer) Installed: ☐Yes ■No

Contractor Name: Alutech United Inc

Mailing Address: 117 Dixon St

City: Selbyville State: DE Zip Code: 19975

Telephone (Daytime): 302-297-8174 (Evening): _____

Fax Number: 302-436-5100 E-Mail Address: haleigh@greesnstreetsolar.com

FINAL ELECTRIC INSPECTION AND INTERCONNECTION CUSTOMER SIGNATURE

The Small Generator Facility is complete and has been approved by the local electric inspector having jurisdiction. A signed copy of the electric inspector's form indicating final approval is attached. The Interconnection Customer acknowledges that it shall not operate the Small Generator Facility until receipt of the final acceptance and approval by the EDC as provided below.

Signed: _____ Date 4/12/17

(Signature of interconnection customer)

Printed Name: Andrezej Lewandowski

Check if copy of signed electric inspection form is attached ☐

.....

ACCEPTANCE AND FINAL APPROVAL FOR INTERCONNECTION ***(for EDC use only)***

The interconnection agreement is approved and the Small Generator Facility is approved for interconnected operation upon the signing and return of this Certificate of Completion by EDC:

Electric Distribution Company waives Witness Test? *(Initial)* Yes (JC) No (_____)

If not waived, date of successful Witness Test: _____ Passed: *(Initial)* (_____)

EDC Signature: julianny.carvalho@exeloncorp.com Digitally signed by julianny.carvalho@exeloncorp.com DN: cn=julianny.carvalho@exeloncorp.com Date: 2017.05.05 14:23:04 -04'00' Date: 05/05/2017

Printed Name: Julianny Carvalho Title: Account Coordinator

First State Inspection Agency, Inc.
1001 Mattlind Way
Milford, DE 19963

1-800-468-7338
302-422-3859

Alutech United, Inc.
James Rodriguc
PO Box 329
Selbyville, DE 19975

CERTIFICATE

Final Inspection Date:	4-12-17
Application #:	033720
Owner:	Bayside Exteriors LLC
Occupancy:	8.85 Additional Capacity – Solar Array
Location:	32295 Nassau Rd.
	Lewes, Sussex Co., DE

This certifies that the installation of electrical equipment listed on referenced application has been approved as meeting the requirements of the National Electric Code, utility, municipalities and Agency rules. Any modification, addition or alteration of the electrical system, after the date of final inspection, will require a new application for inspections and certifications.

Chief Electrical Inspector

F.S. CERT